

CLAIMS

What is claimed is:

1. A semiconductor die, comprising:
a semiconductor substrate having a front side and a back side;
an integrated circuit on a portion of said front side;
a passivation layer covering a portion of said integrated circuit; and
a stress-balancing layer covering at least a portion of said back side.
2. A semiconductor die in accordance with claim 1, wherein said stress-balancing layer comprises one of a single component layer, a substantially homogeneous mixture of a strong material in a matrix material, a heterogeneous composite of particles of a strong material in a matrix material, and a tape with rigidity in the X-Y plane.
3. A semiconductor die in accordance with claim 1, wherein said stress-balancing layer comprises an adhesive material.
4. A semiconductor die in accordance with claim 1, wherein said stress-balancing layer comprises a layer for laser-marking.
5. A semiconductor die in accordance with claim 1, further comprising an adhesive layer attached to said stress-balancing layer.
6. A nonwarp semiconductor die in accordance with claim 5, wherein said adhesive layer comprises a layer of material for laser-marking.

7. A nonwarp semiconductor die, comprising:
a semiconductor substrate having a front side, a back side, and a low ratio of height to a horizontal dimension;
an integrated circuit on said front side;
a passivation layer covering a portion of said integrated circuit exerting a stress on said substrate front side; and
a stress-balancing layer covering at least a portion of said back side, said stress-balancing layer for balancing a portion of said front side stress with a generally equivalent back side stress.

8. A nonwarp semiconductor die in accordance with claim 7, wherein said stress-balancing layer comprises one of a single component layer, a substantially homogeneous mixture of a strong material in a matrix material, a heterogeneous composite of particles of a strong material in a matrix material, and a tape with rigidity in the X-Y plane.

9. A nonwarp semiconductor die in accordance with claim 7, wherein said stress-balancing layer comprises an adhesive material.

10. A nonwarp semiconductor die in accordance with claim 9, wherein said stress-balancing layer comprises a layer of material for laser-marking.

11. A nonwarp semiconductor die in accordance with claim 7, further comprising an adhesive layer attached to said stress-balancing layer.

12. A nonwarp semiconductor die in accordance with claim 11, wherein said adhesive layer for laser-marking comprises a layer of material for laser-marking.

13. A semiconductor die, comprising:
a semiconductor substrate having a front side having an integrated circuit on a portion thereof and a back side;

a passivation layer covering a portion of said integrated circuit; and
a stress-balancing layer covering at least a portion of said back side.

14. The semiconductor die of claim 13, wherein said stress-balancing layer comprises one of a single component layer, a substantially homogeneous mixture of a strong material in a matrix material, a heterogeneous composite of particles of a strong material in a matrix material, and a tape with rigidity in the X-Y plane.

15. The semiconductor die of claim 13, wherein said stress-balancing layer comprises an adhesive material.

16. The semiconductor die of claim 13, wherein said stress-balancing layer comprises a layer for laser-marking.

17. The semiconductor die of claim 13, further comprising an adhesive layer attached to said stress-balancing layer.

18. The semiconductor die of claim 17, wherein said adhesive layer comprises a layer of material for laser-marking.

19. A reduced stress semiconductor die, comprising:
a semiconductor substrate having a front side, a back side, and a low ratio of the height of the semiconductor substrate to a horizontal dimension of the semiconductor substrate;
an integrated circuit on said front side of the semiconductor substrate;
a passivation layer covering a portion of said integrated circuit causing a force acting on a portion of said substrate front side; and
a force-balancing layer covering at least a portion of said back side, said force-balancing layer for balancing a portion of said force on said front side.

20. The semiconductor die of claim 19, wherein said force-balancing layer comprises one of a single component layer, a substantially homogeneous mixture of a strong material in a matrix material, a heterogeneous composite of particles of a strong material in a matrix material, and a tape with rigidity in the X-Y plane.

21. The semiconductor die of claim 19, wherein said stress-balancing layer comprises an adhesive material.

22. The semiconductor die of claim 21, wherein said stress-balancing layer comprises a layer of material for laser-marking.

23. The semiconductor die of claim 19, further comprising an adhesive layer attached to said stress-balancing layer.

24. The semiconductor die of claim 23, wherein said adhesive layer for laser-marking comprises a layer of material for laser-marking.